I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE WITH SUFFICIENT POSTAGE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, D.C., 20231, ON:

Date: 5/29/96 By: Kathy Honneit



Patent

Attorney's Docket No. 024703-006

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of )
)
Kamiyama et al. ) Group Art Unit: 1102
)
Application No.: 08/174,957 ) Examiner: Leader, W.
)
Filed: December 28, 1993 )
)
For: METHOD FOR SURFACE )
TREATMENT OF ALUMINUM )
HIGH-TEMPERATURE )
PROCESSED ARTICLES )



**TRANSMITTAL LETTER**

Assistant Commissioner for Patents
Box AF
Washington, D.C. 20231

Sir:

Enclosed is a Brief for Appellant for the above-identified patent application.

[X] Two copies of Brief for Appellant; and

[X] check for $280.00 and postcard are also enclosed.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17 and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800. This paper is submitted in triplicate.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: _____
Charles H. Jew
Registration No. 34,192
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Date: May 29, 1996

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Date: 5/31/96 By: Kathy Honeycutt



Patent

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| Application No.: 08/174,957 | ) | Examiner: W. Leader |
| | ) | |
| Filed: December 28, 1993 | ) | |
| | ) | |
| For: METHOD FOR SURFACE TREATMENT OF ALUMINUM HIGH -TEMPERATURE PROCESSED ARTICLES | ) | |



## BRIEF FOR APPELLANT

Assistant Commissioner for Patents
Box AF
Washington, D.C. 20231

Sir:

This appeal is from the decision of the Primary Examiner dated November 2, 1995, finally rejecting claims 1, 7-15 and 17, which are reproduced as an Appendix to this brief.

A check covering the $280 requisite Government fee and two extra copies of this brief are being filed herewith.

The Commissioner is authorized to charge any fees that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

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I. Real Party in Interest

Honda Giken Kogyo Kabushiki Kaisha, located at 1-1, Minami-Aoyama 2-chome, Minato-ku, Tokyo Japan and Sky Aluminum Co. Ltd., located at 3-18, Nihonbashi-Muromachi 4-chome, Chuo-ku, Tokyo Japan are the assignees of the entire right, title and interest in this application by virtue of an assignment of the inventors to Honda Giken Kogyo Kabushiki Kaisha, and Sky Aluminum Co. Ltd., which assignment is recorded at Reel No. 6953 and Frame No. 747.

II. Related Appeals and Interferences

There are no related appeals or interferences in this application.

III. Status of Claims

Claims 2-6, 16 and 18-28 are cancelled.

Claims 1, 7-15 and 17 are rejected.

IV. Status of Amendments

An Amendment After Final was filed subsequent to final rejection. In the subsequent action the Examiner maintained his rejection of the claims but indicated that the proposed amendment will be entered upon the filing of an Appeal.

V. Summary of the Invention

The invention is directed to method for treating the surface of an aluminum alloy high-pressure processed article which contains magnesium. The method comprises heating the article at a high temperature of 200 °C or above, etching the surface with an aqueous solution containing a chelating agent wherein the aqueous solution consists of a solution having a pH of 7 or higher, and then carrying out at least one surface treatment selected from the group consisting of hydration oxidation treatment, coating type chromating, anodizing, alternating current electrolysis in an aqueous alkali solution, and coating. (Page 6, lines 13-24 and Claim 17.)

The invention is also directed to a method for treating the surface of an aluminum alloy high-temperature processed article which contains magnesium. The method comprises heating the article at a high temperature of 200 °C or above, etching the surface with an aqueous solution containing a chelating agent wherein the aqueous solution consists of a solution having a pH of 7 or higher, and then carrying out hydration oxidation treatment. (Page 6, lines 6-22 and Claim 1.)

The chelating agent is selected from the group consisting of ethylenediaminetetraacetic acid or an alkali metal salt thereof and an alkali metal salt of picolimic acid. (Page 7, lines 19-21 and Claim 7.)

The hydration oxidation treatment can be carried out using a treating solution having 500 ppm or less of sulfuric acid radical ion concentration, 100 ppm or less of phosphoric acid radical ion concentration, 200 ppm or less of an alkali metal salt concentration and 200 ppm or less of a heavy metal salt concentration, has a pH of 6 to 8 and has a bath temperature of from 80 °C to 100 °C. (Page 9, line 23 to page 11, line 3, and Claim 15.)

VI. The Issues

Whether Claims 1, 7-15 and 17 are unpatentable under 35 U.S.C. §103 over the admitted prior art in view of Lowensheim.

VII. Grouping of Claims

The Claims do not stand or fall together. Appellants consider Claims 1 and 7-15 to be separately patentable from Claim 17.

VIII. Argument

The Examiner rejected Claims 1, 7-15 and 17 under 35 U.S.C. § 103 as being unpatentable over the admitted prior art at pages 1-5 of the specification in view of

Lowenheim. The Examiner reasoned that the admitted prior art apparently shows that the process of etching aluminum and subsequent treatment to improve corrosion resistance is known, specifically citing Japanese document 1-212,775. The Examiner stated that the claimed invention differs by reciting that the method for improving corrosion resistance is hydration oxidation treatment. The Examiner however stated that Lowenheim discloses a process of sealing aluminum by immersing in boiling water to promote hydration oxidation, thus, the Examiner concluded that it would have been obvious to include a step of hydration oxidation treatment in the process of the admitted prior art because this treatment is known to improve corrosion resistance.

The admitted prior art does not support the Examiner's position that the claimed invention differs only in the inclusion of a hydration oxidation treatment step. In particular, at page 3, lines 8-17, the specification states:

> Japanese Patent Laid-open No. 1-212775:
>
> This discloses that etching is carried out in an aqueous acidic solution of pH 2 or less containing chloride ions, followed by etching in an aqueous alkaline solution of pH 13 or more.
>
> This method has the problem that it requires [a] two-stage treatment, which makes productivity poor to cause a cost increase. Moreover, because of [the] occurrence of smuts, difficulties such as defective coatings may be caused in the subsequent coating and chemical conversion.

As is apparent, the plain reading of the text simply does not support the Examiner's position that the admitted prior art teaches or suggests an aluminum treatment process having the steps of heating the aluminum article at 200 degrees or higher and etching the surface of the article surface with an aqueous solution having a pH of 7 or

higher and containing a chelating agent.

Further, none of the other portions of the admitted prior art supports the Examiner's position. Specifically, with respect to Japanese document 50-86540, the discussion at page 2, lines 17-20 states that an aluminum substrate is treated with an aqueous alkali silicate solution and then treated with a vinylidene chloride resin to form an anticorrosive coating. With respect to Japanese document 4-04781, the discussion at page 3, lines 1-3 states that an aluminum surface is decreased with a weak alkali and then treated in an aqueous solution containing an oxidizing agent to form a boehmite coating.

Appellants would further like point out that in the office action mailed on November 15, 1996, on page 2, last line, the Examiner indicated that the admitted prior art was described on pages 1-5 of the specification. Although the section of the specification entitled "Description of Related Art" begins on page 1, line 15 and the caption "Summary of the invention" begins on page 5, line 4, Appellants submit that the discussion as set forth on page 4, lines 10 through page 5, line 3 is not part of the of admitted prior art since it clearly is directed to certain aspects of the "present invention." See, for example, page 4, lines 11 and 17.

Appellants submit that not even a reasonably expansive interpretation of the admitted art would support the Examiner's reading. Thus, even if Lowenheim teaches a process of sealing aluminum by immersing in boiling water to promote hydration as suggested by the Examiner, given that the admitted prior art does not teach or suggest the heating and etching steps of the inventive process, Appellants submit that the claimed invention is not obvious in view of the admitted prior art and Lowenheim.

Appellants further submit that even if the admitted prior art teaches all steps of the claimed invention except for hydration oxidation, a person skilled in the art would not be motivated to combine the teachings of Lowenheim. Specifically, as discussed on page

463, in the paragraph entitled "Sealing anodic Coatings", Lowenheim teaches that the utility and performance of anodic coatings on aluminum often depends upon the type and quality of postanodizing treatment employed. One such postanodizing treatment is sealing which involves subjecting the anodic coating to a hot aqueous environment.

It is known that an anodic coating is an electrolytic treatment of a metal such as aluminum as a result of which a heavy, stable oxide films are formed on the surface. Giving that the claimed invention does not employ electrolytic treatment (i.e., anodizing) prior to hydration oxidation, a person skilled in the art would not be motivated to use the sealing step as a postanodizing treatment.

It should be noted that in Claim 17, the claimed invention includes at least one surface treatment step selected from the group consisting of hydration oxidation, coating type chromating, anodizing, alternating current electrolysis, and coating. However, it is evident that the claimed invention does not require an anodizing step that is followed by hydration oxidation.

Finally, the claimed invention is non-obvious in view of the unexpected results achieved by employing a chelating agent in the aqueous solution in the etching step. Although Lowenheim discloses the use of chelating agents as substitutes for phosphates in alkaline cleaners, Lowenheim teaches the use of chelating agents for environment reasons when phosphate-free solutions are desired. (See page 75, lines 20-23 and page 76, lines 22-23.) A person skilled in the art would not be inclined to use chelating agents because they are more expensive. Furthermore, as evidenced by the comparative data set forth in Table 1, on page 18 of the specification, etching without a chelating agent produces surfaces having unacceptable corrosion, strength, and appearance.

Appellants submit that the unexpected results achieved with the chelating agent are not suggested by the Lowenheim. In particular, Lowenheim teaches that phosphates are

useful mainly for their water-softening properties, although they contribute to dispersion of soils (or peptization), efficient rinsing, and control of scale. See Lowenheim, paragraph bridging pages 75 and 76. As is apparent, there is no suggestion that the use of phosphates in the etching solution would result in metal (i.e., aluminum) having superior surface properties.

Finally, Appellants submit that Claims 1 and 7-15 are separately patentably from independent Claim 17. Claim 17 is differs from Claim 1 in that the Claim 1 includes the hydration oxidation step whereas Claim 17 includes at least one surface treatment step selected from the group consisting of hydration oxidation, coating type chromating, anodizing, alternating current electrolysis, and coating. In the event that Claim 17 is rejected because the art discloses one of the recited surface treatments other than hydration oxidation, Appellants submit that the other pending Claims which recite hydration oxidation only would be patentable.

IX. Conclusion

For the foregoing reason, Appellants submit that Claims 1, 7-15 and 17 define novel and non-obvious subject matter and request that the Examiner's rejection be reversed.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: _____

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Date: May 29, 1996

## APPENDIX

**The Appealed Claims**

1. A method for treating the surface of an aluminum alloy high-temperature processed article, comprising heating an aluminum alloy containing Mg at a high temperature of 200° C or above, etching the surface with an aqueous solution containing a chelating agent wherein the aqueous solution consists of a solution having a pH of 7 or higher, and then carrying out hydration oxidation treatment.

7. The method according to Claim 1, wherein said chelating agent is selected from the group consisting of ethylenediaminetetraacetic acid or an alkali metal salt thereof and an alkali metal salt of picolimic acid.

8. The method according to Claim 7, wherein said chelating agent is disodium ethylenediaminetetraacetate.

9. The method according to Claim 1, wherein said chelating agent is in a concentration of 0.005 mol/lit.

10. The method according to claim 1, wherein said chelating agent is in a concentration of from 0.005 mol/lit to 0.5 mol/lit.

11. The method according to Claim 1, wherein said aqueous solution further contains an amine compound.

12. The method according to Claim 11, wherein said amine compound is triethanolamine.

13. The method according to Claim 1, wherein said etching is carried out at a temperature of from 40°C to 90°C for 3 seconds to 30 minutes.

14. The method according to Claim 1, wherein said Mg is in a content of 2% by weight or more.

15. The method according to Claim 1, wherein said Mg is in a content of 2% by weight or more, and said hydration oxidation treatment is carried out using a treating solution having 500 ppm or less of sulfuric acid radical ion concentration, 100 ppm or less of phosphoric acid radical ion concentration, 200 ppm or less of an alkali metal salt concentration and 200 ppm or less of a heavy metal salt concentration, has a pH of 6 to 8 and has a bath temperature of from 80°C to 100°C.

17. A method for treating the surface of an aluminum alloy high-pressure processed article, comprising heating an aluminum alloy containing Mg at a high temperature of 200° C or above, etching the surface with an aqueous solution containing a chelating agent wherein the aqueous solution consists of a solution having a pH of 7 or higher, and then carrying out at least one surface treatment selected from the group consisting of hydration oxidation treatment, coating type chromating, anodizing, alternating current electrolysis in an aqueous alkali solution, and coating.